

M.E DEGREE EXAMINATIONS: APRIL/ MAY 2010

Second Semester

STRUCTURAL ENGINEERING

SEE508: Aseismic Design of Structures

(Use of IS 1893, IS 4326, IS 13920, IS 13827 and IS 13828 is permitted)

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:

PART A (10 x 2 = 20 Marks)

1. Differentiate between Magnitude and Intensity.
2. What is the importance of ductility in RC structures?
3. Define Response Spectrum of an earthquake.
4. What is Zero Period Acceleration?
5. Define the following: (i) Centre of Rigidity, and (ii) Centre of Stiffness.
6. List the types of damping.
7. What are the effects of soil liquefaction at a given site?
8. What is Capacity Design?
9. Name any four Isolation devices.
10. What do you mean by Soft storey and Weak storey?

PART B (5 x 16 = 80 Marks)

11. (a) (i) Explain Seismograph and Seismogram with neat sketches. (10)
(ii) Differentiate Static and Dynamic loads. (6)

[OR]

- (b) (i) What are seismic waves? Explain the different types of seismic waves with neat sketches. (10)
(ii) List any four major Indian Earthquakes. (6)
12. (a) Explain the concept of response spectrum. How will you construct response spectrum for a given ground motion?

[OR]

- (b) (i) Explain the Elastic rebound Theory with a neat sketch. (10)
(ii) Briefly explain the different types of faults with neat sketches. (6)
13. (a) Explain with neat sketches how ductility can be improved in Flexural and Compressive structures as per IS: 13920?

[OR]

- (b) A four-storey RC frame building as shown in Fig. 1 is situated at Roorkee. The height between the floors is 3 m and total height of the building is 12 m. The dead and normal live load is lumped at the respective floors. The soil below the foundation is found to be hard rock. The building is intended to be used as a hospital. Determine the total base shear and lateral force by equivalent static procedure as per IS 1893(Part 1): 2002.
14. (a) Briefly discuss the various retrofitting and rehabilitation techniques adopted for strengthening of buildings as per IS code with neat sketches.
- [OR]**
- (b) Explain the various types of shear wall with neat sketches. Write the step by step procedure for the design of Reinforced Concrete Shear wall.
15. (a) What is a passive control system? Write in detail about the different types of passive control systems with neat sketches.
- [OR]**
- (b) (i) Explain Base Isolation systems and their advantages. (10)
(ii) What are the software packages used for the analysis and design of buildings for earthquake loads? Explain the features of any one software. (6)

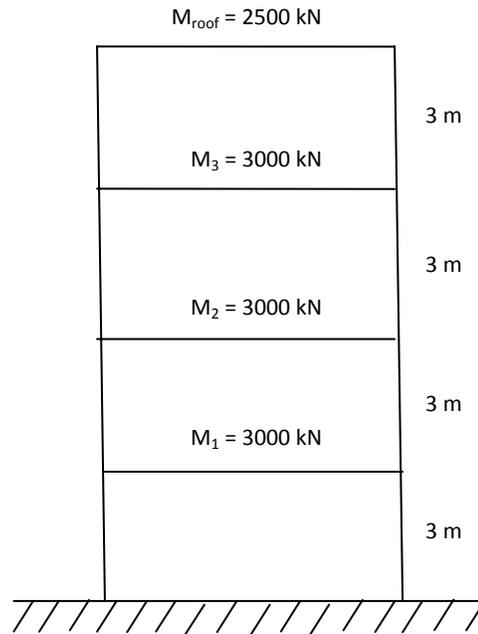


Fig. 1
